MAJOR LAND PERMIT APPLICATION

Environmental Assessment Report

Applicant: Government of the US Virgin Islands – Dept. of Public Works
Project: VI ST ER STX(003): Storm Damage Repair to Roadways, Culverts, Embankments, Bridges, and Other Roadway Features on St. Croix, USVI

Site: Rt. 82 MP-2.5 – Coakley Bay

JANUARY 2022

Prepared by: Tysam Tech, LLC

Tysam Tech, LLC

INTENTIONALLY LEFT BLANK

Table of Contents

Table of Figures

1.00 NAME AND ADDRESS OF APPLICANT

Government of the US Virgin Islands
Department of Public Works

Mailing Address:
6002 Annas Hope
Christiansted, VI 00820

Physical Address:
6002 Annas Hope
Christiansted, VI 00820

2.00 LOCATION OF PROJECT

The project is located at the following physical address:

Rt. 82 East End Road MP-2.5
Christiansted, VI 00820

The Rt. 82 MP-2.5 Coakley Bay project site is located in St. Croix, east of Carden Bay. The site is positioned at 17°45'32.6"N, 64°38'07.3"W, along Route 82, East End Road. The Location and Agency Review Map in Figure 2.00.1 below and Figure 2.00.2 establishes the areas of Coastal Zone Management (CZM) first tier jurisdiction (in red).

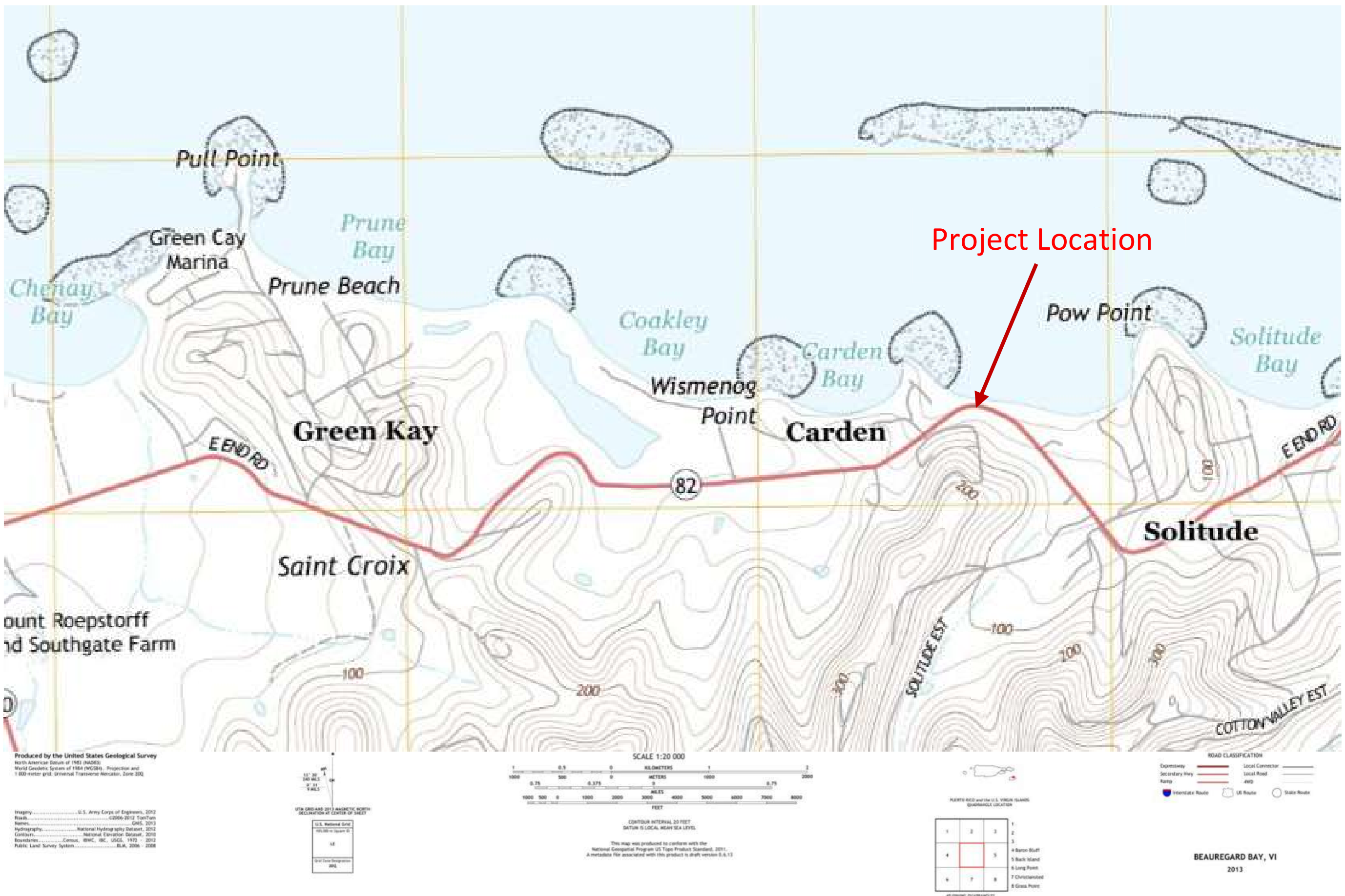

Figure 2.00.1 – Location and Agency Review Map (USGS Quadrangle Map, Beauregar Bay, 2013)

Figure 2.00.2 –Vicinity Map Showing Location of Facility within Tier 1 Territory (Google Earth).

3.00 ABSTRACT

SUMMARY OF WORK FOR ALL 15 SITES

Significant damage to roads, gut crossings and bridges occurred as a result of the landfall of Hurricane Maria in 2017 to the island of St. Croix, USVI. To provide the necessary repair to the damaged infrastructure, the USVI Department of Public Works (DPW) has contracted VI Paving, Inc. (VIP) to undertake the repairs at 15 different sites around St. Croix. These sites consist of different types of rehabilitation work and different project scale. Of the 15 sites, three are bridge rehabilitations, seven are culvert rehabilitations, and the remaining five are strictly roadway rehabilitations. This project is funded through the US Department of Transportation (USDOT), Federal Highway Administration, Eastern Federal Lands Highway Division and is in partnership with the USVI Department of Public Works (DPW).

The project involves the removal of damaged asphalt and concrete pavement, pipe culverts, bridges, guardrails, retaining walls, embankment material, utility lines and poles, and other debris. The damaged infrastructure will be replaced by new culverts, bridges, headwalls, guardrails, rip rap and gabion baskets, concrete retaining walls, embankment stabilization materials, drainage inlets, aggregate base, asphalt pavement, and concrete pavement. Also included in the scope of work is the clearing and cleaning of existing drainage structures and the reconditioning of shoulders and ditches.

The aforementioned activities will restore the proposed project areas to full and improved function and prevent similar damage to occur during future storm events.

<u>RT. 82 MP 2.5 – COAKELY BAY</u>

For this particular site under project VI ST ER STX(003), 250 linear feet of roadway at MP 2.5 on Route 82 will be rehabilitated. The existing 18-inch reinforced concrete pipe (RCP) culvert will be removed and replaced with two 48-inch HDPE pipe culverts. Culvert inlet elevation will be lowered and inlet width increased. The concrete headwalls on both sides of the roadway will be removed and replaced and additional rip rap will be installed at the spillway to further stabilize the culvert outlet. The damaged guardrail will also be removed and replaced.

Project Assurances

- Employees' and the public's health and safety are protected with the best available systems and technologies.
- Environmental impact is considered at all times.
- No significant negative impact to environment.
- Air quality is protected.
- Stormwater quality is protected.
- Nearshore water quality is protected.

4.00 STATEMENT OF OBJECTIVES SOUGHT BY THE PROPOSED PROJECT

VIP seeks to repair and rehabilitate the referenced section of roadway, existing culvert, headwalls, and guardrail which were compromised due to storm damage from Hurricane Maria. In order to prevent future damage to the roadway and related infrastructure, the existing culvert will be replaced and additional rip rap installed at the culvert outlet.

5.00 DESCRIPTION OF PROJECT

5.01 SUMMARY OF PROPOSED ACTIVITY

a) Purpose of Project

The purpose of the project is to rehabilitate a 250-foot section of roadway which was damaged from Hurricane Maria in 2017. The location is along East End Road, Route 82. The existing 18-inch RCP culvert will be demolished and replaced with two 48-inch HDPE pipe culverts. The concrete inlet will be increased to allow more flow into the larger culverts. Concrete headwalls will be installed on both shoulders, backfill added and compacted, and a base asphalt layer along with surface layer will be applied with a crown profile. Additionally, rip rap will be installed at the spillway to further stabilize the culvert outlet.

b) Presence and Location of any Critical Areas and Possible Trouble Spots

The project area is in a fairly populated shoreline section in northeast St. Croix, just east of Carden Bay. The roadway is directly adjacent to the shoreline. Due to the proximity to the water, the clearing of debris and repair of the roadway must not cause any impact to the surrounding areas, shoreline or wildlife.

Site slope is primarily 40-60%, however, along East End Road to the west, slope becomes 20-40%. Elevation is approximately 25 feet above sea level.

A review of the U.S. Fish & Wildlife Information for Planning and Consultation (IPaC) indicate two federally endangered reptile species that are known to swim in the offshore waters, less than 100 feet north of the project area. They are the Hawksbill Sea Turtle (*Eretmochelys imbricata*) and the Leatherback Sea Turtle (*Dermochelys coriacea*). In addition, the West Indian Manatee (*Trichechus manatus*) is a threatened species and has been found in the offshore waters near the project site as well.

In review of the 2018 VI DPNR Integrated Report, water quality in the area has been designated as currently Unknown due to lack of sampling stations in the area.

Due to the nature of the project scope of road rehabilitation, there exists potential for sedimentation and erosion during project activities. However, appropriate protective Best Management Practices (BMPs) will be employed through the entire project timeline in accordance with minimum requirements of the VI Environmental Protection Handbook (2002). As the project footprint is essentially identical to the existing infrastructure, there are no anticipated impacts to stormwater and air quality, and work can be done quickly and with minimal site disturbance.

These BMPs chosen will meet the minimum standards of the VI Environmental Protection Handbook (2002).

c) Proposed Method of Land Clearing

The brush and debris will be removed by cutting vegetation and removing it off-site as green waste for disposal at the Waste Management Authority Transfer Station. Earth work will be limited to scraping road surface and excavating the culvert.

d) Plans for Topsoil and Site Disturbance Provisions

Topsoil and site disturbance will be minimized during the construction timeline. The project will focus within the existing footprint of the road along the 250-foot length as depicted in the site drawings.

Some soil removal and compaction will occur at the northside of the road, to stabilize for geogrid and riprap placement, and shoulder grading and shaping will occur to achieve correct profile for culvert and headwall construction and long-term drainage.

The site will otherwise see no topsoil or site disturbance, and compaction of subbase will occur before asphalt layers are placed down.

A Storm Water Pollution Prevention Plan (SWPPP) complying with the Department of Planning and Natural Resources' Construction General Permit requirements will be implemented during project activities.

e) Erosion and Sediment Control Devices to be Implemented

The following Best Management Practices (BMPs) will be implemented on the site to control runoff and protect natural resources:

Silt Fence – Due to the close proximity to the shoreline, silt fencing shall be used to protect the shoreline and surface water from runoff and sediment loss on the north side along the beach/sand line.

Containment Berms– A containment berm will be constructed if needed to support silt fencing in containing stormwater and retaining sediment.

Design of these BMPs will follow the minimum standards of the VI Environmental Protection Handbook (2002).

f) *Schedule for Earth Changing Activities & Implementation of Erosion/Sediment Control Measures*

No earth change activities will take place until the BMPs are installed at the site. Erosion and sediment control for the Site Project construction include:

1. Ensure silt fencing and other BMPs are setup before work begins.

2. Minimize earth work in the removal of the existing culvert and replacement with pipe culvert.

3. Minimize time for replacement of concrete headwalls and guardrail.

4. Minimize re-stabilization time for shoulder and culvert outlet to install additional riprap.

5. Compact and re-asphalt the road before removing silt fencing and/or berms.

g) *Maintenance of Erosion and Sediment Control*

Sediment control devices, including dikes swales, and outlets, will be inspected every 14 calendar days and after any heavy rainfall of 0.25 inches or more. If defects or damage are noted in the measures, the defect or damage will be immediately reported and repaired. If the measures prove to be inadequate to control erosion, changes will be made to the design and additional measures will be added as necessary.

Accumulated sediment will be removed in accordance with the approved SWPPP requirements. Accumulated sediment will be removed when it reaches 40% of the height of the silt fencing. Worn, torn or otherwise damaged silt fencing will be fixed or replaced.

The site will be cleaned on a daily basis of litter, debris and materials such as paper, wood, concrete, etc.

h) *Stormwater Management*

No proposed changes to stormwater flows, quantities or direction are proposed for this project. Improvements to culvert sizes and headwall structure will improve flood control and prevent bottlenecking, but not change flow routes.

Management of stormwater for the duration of the project will be limited to ensuring no discharge of contaminated stormwater from the site boundaries, and prevention of erosion of project areas through controlled release from site discharge points.

i) Maintenance Schedule of Stormwater Facilities

Sediment control devices, including dikes swales, and outlets, will be inspected every 14 calendar days and after any heavy rainfall of 0.25 inches or more. If defects or damage are noted in the measures, the defect or damage will be immediately reported and repaired. If the measures prove to be inadequate to control erosion, changes will be made to the design and additional measures will be added as necessary.

Accumulated sediment will be removed when it reaches 40% of the height of the silt fencing, and in accordance with the approved SWPPP requirements. Worn, torn or otherwise damaged silt fencing will be fixed or replaced. The site will be cleaned on a daily basis of litter, debris and materials such as paper, wood, concrete, etc.

j) Sewage Disposal

Project sewage management will be limited to maintaining portable restrooms on-site, and ensuring they are emptied by a qualified waste management company at an appropriate frequency to minimize spills or discharges at the site.

There are not any existing sewer lines (either private or municipal) in the area. The proposition of the installation of sewage system, units or piping is outside of the scope of this project.

5.02 SITE PLANS (See Attached Drawings)

5.02.01 Lot Layout (See Attached Engineer/Surveyor drawings)

5.02.02 Road Layouts (See Attached Engineer/Surveyor drawings)

5.02.03 Position of Structures (See Attached Engineer/Surveyor drawings)

5.02.04 Septic System/wastewater Treatment (Not Applicable)

5.02.05 Stormwater Drainage (See Attached Engineer/Surveyor drawings)

5.02.06 Stormwater Facilities (See Attached Engineer/Surveyor drawings)

5.02.07 Erosion and Sediment Control Plan (See Attached Spec Sheets)

5.02.08 Landscaping Plan (Not Applicable)

5.02.09 Other Required Drawings (See Attached Engineer/Surveyor drawings)

5.02.10 Required Maps (See Attached: Official Zoning Map, Parcel Map, FIRM)

5.03 PROJECT WORKPLAN

The project is proposed to be performed as 4 Phases, in sequential order with some overlapping tasks. It will entail site preparation and mobilization, demolition and earth work, construction and finally, demobilization and cleanup.

Phase 1 – Site Preparation

This phase will consist of mobilization and initial survey and staking. After layout determination and establishment, Erosion & Sediment control will be set up, along with Traffic and Pedestrian Control Plan that will follow Maintenance of Traffic (MOT) requirements set forth by USDOT. Mobilization of machinery and equipment will follow proper site setup for safety and protection of workers and environment.

Approximate Timeline – 14 days

Phase 2 – Demolition

This phase will begin with initial site clearing and basic grubbing to prepare for demolition. Vegetation will be removed and sent to the WMA Transfer station for green waste. Demolition of the culvert, headwall and existing road structure will occur next, with C&D waste disposed of in the Anguilla Landfill via permitted dump trucks. After full demolition and removal of C&D waste, grading and excavation of soil and substrate will commence to prepare new structures for installation.

Approximate Timeline – 21 days

Phase 3 – Earth and Culvert Construction

This phase will entail embankment shaping and setting, culvert installation and headwall casting. Inlet and Outlet modification and installation will complete the infrastructure layout.

Approximate Timeline – 21 days

Phase 4 – Roadway Construction

This final phase will focus on roadway construction and profile. Aggregate base will be laid over newly installed infrastructure. New safety guardrails will be installed as per attached site plan drawings, and final asphalt layers will be applied as per road construction specifications to provide correct profile for safe driving conditions and to allow for proper drainage and storm resistance. Finally, installation of signage and pavement markings will complete the construction work, and the site will be stabilized and closed through any necessary landscaping and site cleanup as required by environmental standards and regulation.

Approximate Timeline – 21 days

All work on this road project will follow Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, as well as local building, environmental and safety regulations.

Total estimated time for construction completion is estimated at 90 days.

6.00 SETTING AND PROBABLE PROJECT IMPACT ON THE NATURAL ENVIRONMENT

6.01 CLIMATE AND WEATHER

Prevailing Winds

The Virgin Islands lie in the "Easterlies" or "Trade Winds" that traverse the southern part of the "Bermuda High" pressure area, and the predominant winds are usually from the east-northeast and east (IRF, 1977). These trade winds vary seasonally and are broadly divided into 4 seasonal modes: 1) December to February; 2) March to May; 3) June to August; and 4) September to November. Below are the characteristics of these modes as taken from Marine Environments of the Virgin Islands Technical Supplement No. 1 (IRF, 1977), and based on U.S. Naval Oceanographic Office data.

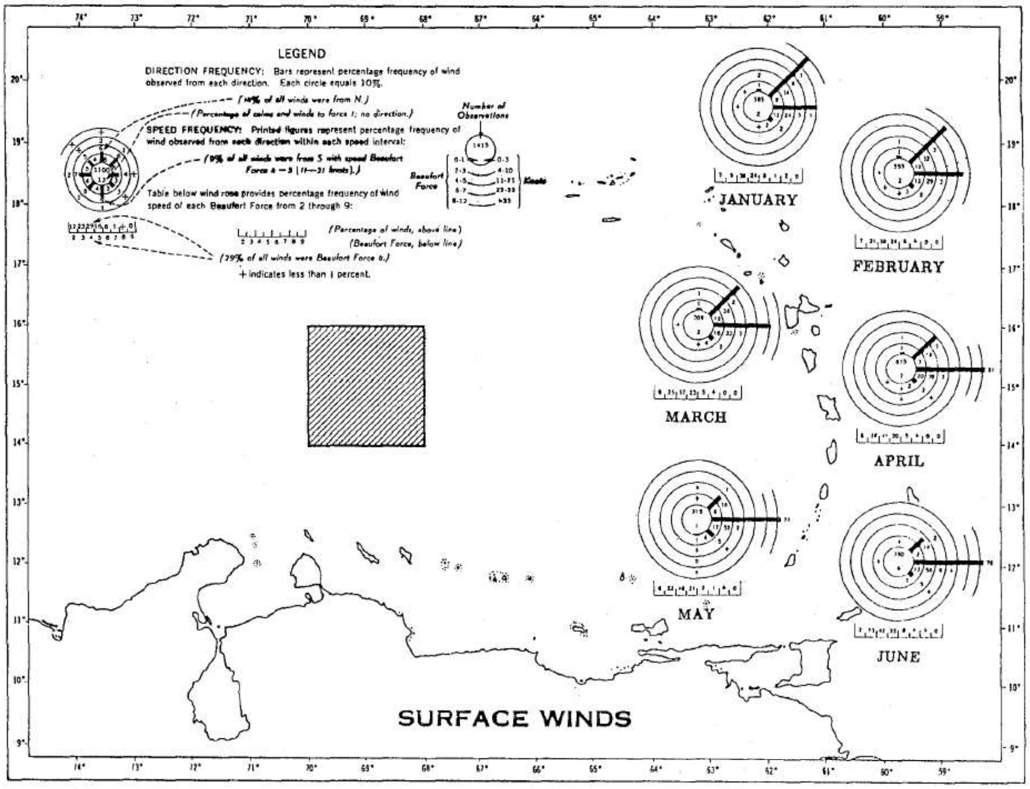

Figure 6.01.1 –Wind Direction and Speed Frequency, Central Caribbean, January - June.

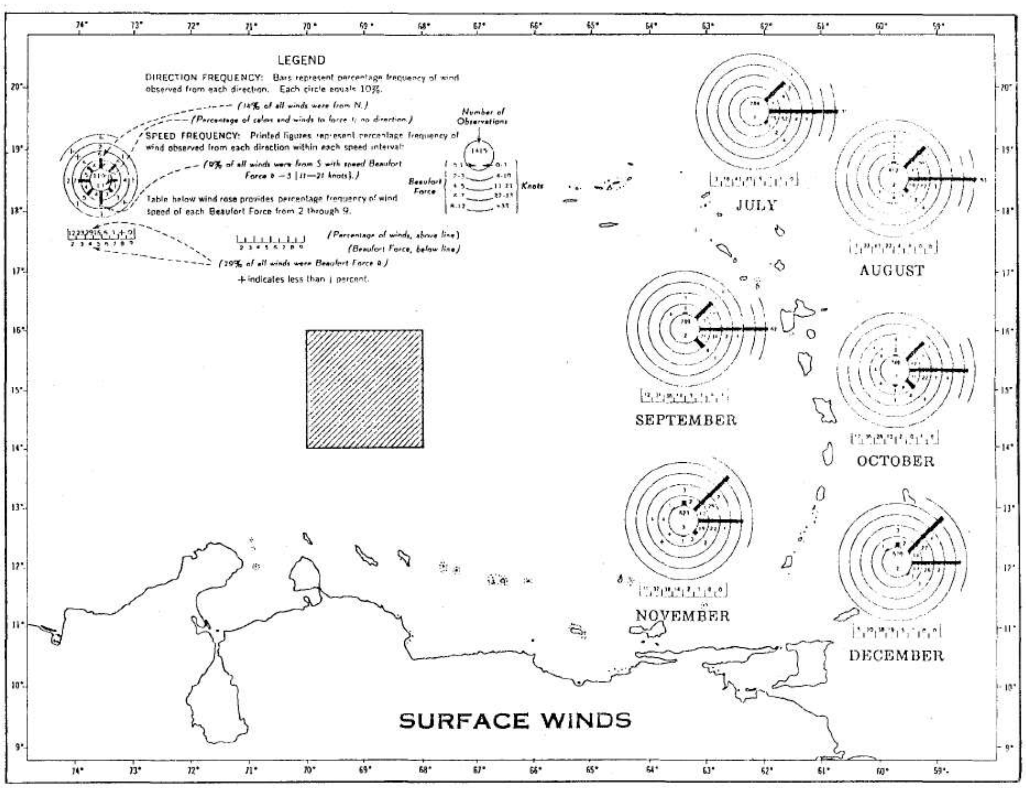

Figure 6.01.2 –Wind Direction and Speed Frequency, Central Caribbean, July - December.

December – February

During the winter, the trade winds reach a maximum and blow with great regularity from the east-northeast. Wind speeds range from eleven to twenty-one knots about sixty percent of the time in January. This is a period when the Bermuda High is intensified with only nominal compensation pressure changes in the Equatorial Trough. The trade winds during this period are interrupted by "Northerners" or "Christmas Winds," which blow more than twenty knots from a northerly direction in gusts from one to three days. Such outbreaks average about thirty each year. They are created by strengthening of high-pressure cells over the North American continent, which, in turn, allow weak cold fronts to move southeastward over the entire Caribbean region. These storms are accompanied by intermittent rains, clouds and low visibility.

March – May

During the spring, the trade winds are reduced in speed and blow mainly from the east. Winds exceed twenty knots only thirteen percent of the time in April. The change in speed and direction is the result of a decrease of the Equatorial Trough.

June – August

Trade winds reach a secondary maximum during this period and blow predominantly from the east to east-southeast. Speeds exceed twenty knots 23% of the time during July. The trend for increasing winds results from the strengthening of the Bermuda High and a concurrent lowering of the pressure in the Equatorial Trough. Trade winds during this period are interrupted by occasional hurricanes.

September – November

During the fall, winds blow mainly from the east or southeast and speeds reach an annual minimum. Only 7% of the winds exceed twenty knots in October. The low speeds result from a decrease in the Equatorial Trough. During this period, especially during late August through mid-October, the normal trade wind regime is often broken down by easterly waves, tropical storms and hurricanes.

Storms and Hurricanes

There are numerous storm events each year, from squalls and thunderstorms to hurricanes. Standard rain events occur most frequently during the summer, lasting only a few hours and causing no pronounced change in the trade winds.

A tropical cyclone whose winds exceed 74 miles per hour is termed a hurricane in the northern hemisphere and can range in strength from causing little to no damage, to destroying. These hurricanes occur most frequently between August and mid-October with their peak activity occurring in September.

Figure 6.01.3 depicts NOAA data on historic Hurricanes and Tropical Storms in the vicinity of St. Croix.

Figure 6.01.3 – Historic Tracks of Hurricanes and Tropical Storms for St. Croix

Climate

The climate of St. Croix, as well as that of the Territory, is characterized by generally fair, tropical weather, with usually consistent wind speed and direction. Temperature swings are narrow, both seasonally and diurnally.

The closest weather station to the facility is Christiansted Ft. Climate data from this station is found below in Table 6.01.1.

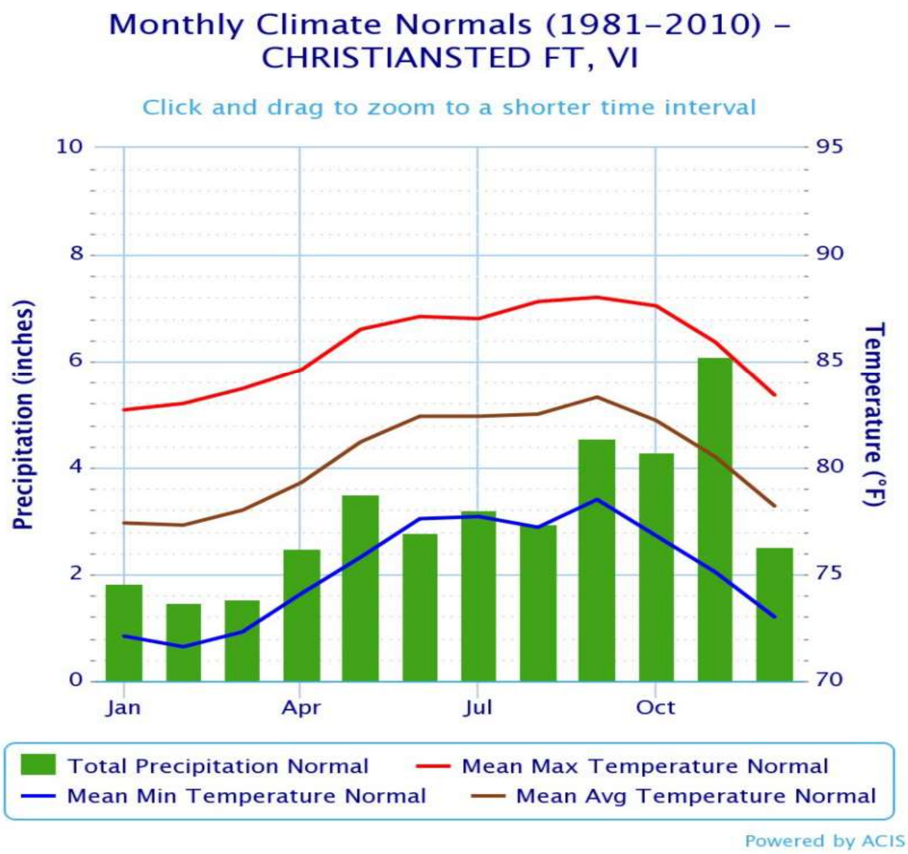

Table 6.01.1 –Average Temperatures in Christiansted, St. Croix

The nearest NOAA National Ocean Service Weather Station is located in Christiansted Harbor, St. Croix (Station CHSV3 – 9751364; ndbc.noaa.gov/station_page.php?station=chsv3). Climate data from this station is found below in Tables 6.01.2 and 6.01.3 below.

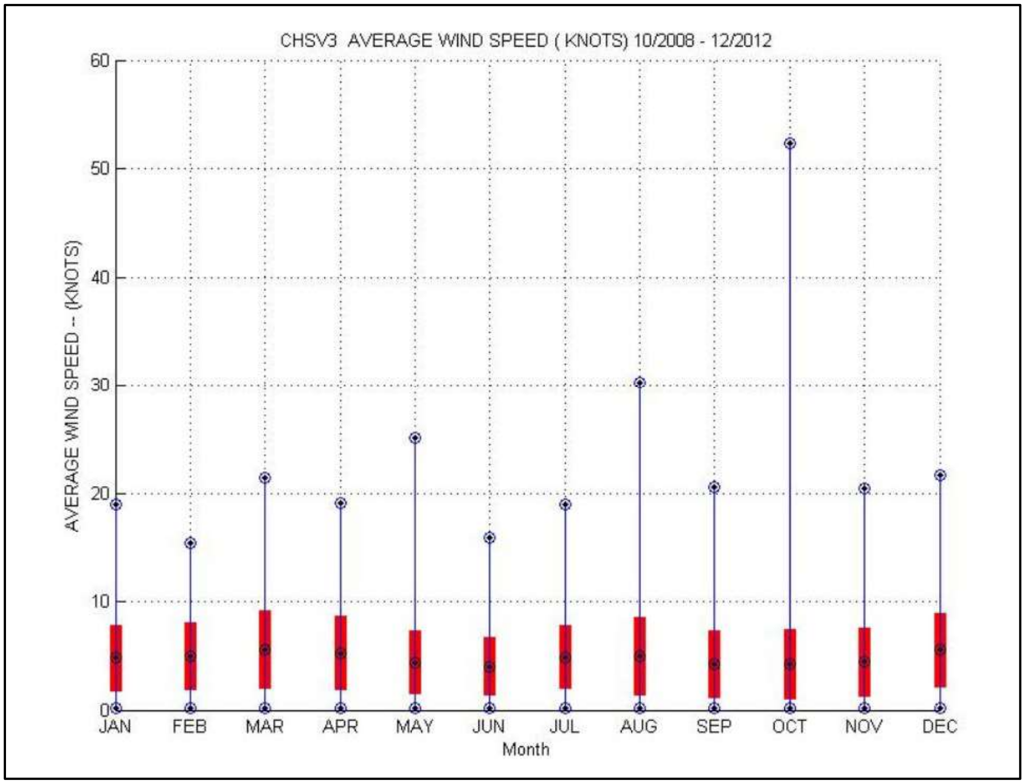

Table 6.01.2 – Average Wind Speed, St. Croix

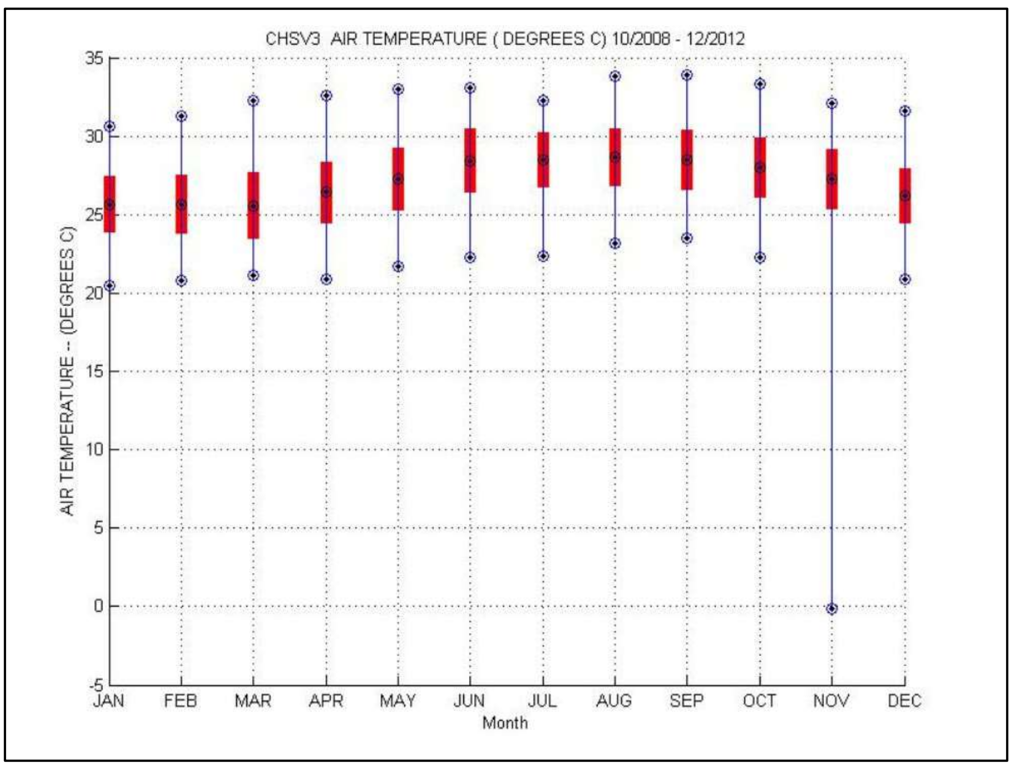

Table 6.01.3 – Average Air Temperature, St. Croix

The average annual rainfall on St. Croix is about 40 inches, ranging from about 30 inches in the east to more than 50 inches in the mountains of the northwest. Average annual temperature is a moderate 79°F, with an average low in winter of 76°F and an average high in summer of 84°F; temperatures are 2 to 3 degrees lower at altitudes of 800 to 1,000 feet. Occasionally, maximum daily temperatures will exceed 90°F and minimum temperatures will be less than 70°F. Prevailing wind direction is from the east or northeast.

Rain generally occurs in brief, intense showers of less than a few tenths of an inch. Rains exceeding 1-inch in 48 hours occur about 7 or 8 times a year in the central part of the island; they are slightly more frequent in the mountains of the northwest and less frequent in the eastern part. February and March are the driest months and September is the wettest. Nearly half the average annual rain falls from August through November. Large storms can occur in any month although more likely during July to November, the hurricane season. (Jordan, 1975).

Impact on the Proposed Project

The applicant has carefully analyzed both climate and weather. The project and road rehabilitation have been designed to withstand Category V hurricane events and prevailing climate.

6.02 LANDFORM, GEOLOGY, SOILS AND HISTORIC LAND USE

Geology of St. Croix

St. Croix is the southernmost island of the U.S. Virgin Islands, lying 40 miles south St. Thomas and separated from it by an ocean trench 3,600 meters deep. It lies about 95 miles southeast of San Juan, Puerto Rico. St. Croix is the largest island in the USVI, with a total area of 82 square miles. The island is approximately 22 miles long, east to west and is about 7 miles in width. St. Croix is geographically located in the Lesser Antilles and lies completely within the Caribbean Sea.

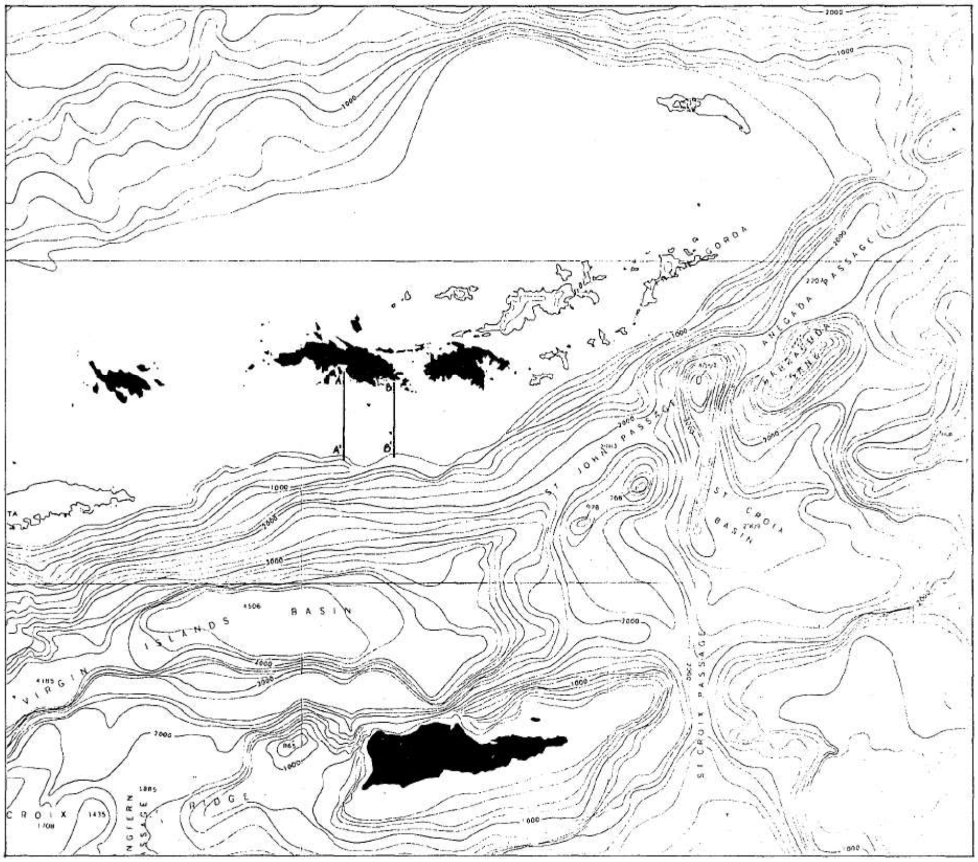

Figure 6.02.1 – Bathymetry of USVI basins and plateaus. From van Eepoel, et al, 1971.

The Virgin Islands are near the northeastern corner of the present Caribbean Plate, a relatively small trapezoidal-shaped plate which is moving eastward relative to the North and South American continents carried on the American Plate. The arc of the Lesser Antilles is an active volcanic arc above a subduction zone in which Atlantic oceanic crust of the American Plate is carried downward under the Caribbean Plate. The Caribbean Plate is sliding past North and South American plates along east-west trending northern and southern boundaries. The western boundary is a subduction zone in which the Cocos Plate is being driven northeastward and down under the edge of the Caribbean Plate west of Central America (Rogers, 1988).

St. Croix lies on a somewhat isolated, submerged ridge separated from the Puerto Rico Bank by the Virgin Islands Basin. Geologically it is related to the islands of the Puerto Rico Bank. If St. Croix was ever connected to the northern Virgins, it may have been separated from that group by either block (Meyerhoff 1927, Whetten 1966) or shear faulting (Adey 1977, Turner 1971).

The oldest rocks exposed on St. Croix are epiclastic volcanic sandstone and mudstone of the Caledonia Formation (Whetten 1966). These weakly metamorphosed, uplifted, folded and faulted rocks were derived from volcanic and other narrow-trench sediments originally deposited by turbidity currents on the deep ocean floor about 70 to 80 million years ago (Adey 1977). Buck Island is an emergent part of the St. Croix shelf.

Somewhat later in the Cretaceous, one or more volcanoes formed on the sea floor to the south or southeast of St. Croix. Volcanic debris was shed northward to form the Judith Fancy formation, composed of tuffaceous sedimentary rocks, which occur on St. Croix but not on Buck Island.

St. Croix was uplifted above sea level in the Oligocene (Whetten 1974), originally as two islands. The East End Range (including proto-Buck Island) and the Northside Range were separated by a trough several miles wide. The trough was subsequently filled in by the deposition of the Kingshill marl formation. There then followed a period of mild deformation, post-Miocene uplift, and erosion to form the present-day topographic features (Rogers and Teytaud, 1988). Therefore, the island of St. Croix consists geologically of two predominant mountainous areas (the North side and the East End ranges), with a central sediment filled valley in between.

The limestone and marls that overlay the Jealousy formation are known as the Kingshill formation. After these formations were deposited, the area underwent another period of uplifting, the two islands became connected by the newly emergent filled-in area, and the island of St. Croix was formed. Since that time, geologic activity has been limited primarily to the erosion of sediments and the formation of ponds, beaches, reefs, and beach rock coast.

Two large basins, the Virgin Islands Basin and the St. Croix Basin, separate St. Croix from the other Virgin Islands. Within the distance between St. Croix and St. Thomas, about 40 nautical miles, hydrographic charts show that the ascent from the sea floor north of St. Croix is as much as 70º. Frasetto and Northrop (1057) indicate that this northern topographic slope extends downward to the Virgin Islands Basin at a gradient up to 43º. There is an ascent of 13,656 feet within a horizontal distance of 25,800 feet, terminating with the steep north coast in the vicinity of Hams Bluff. The area has been described as the south side of the Anegada Trough and its related fault scarp (Taber 1922). Meyerhoff (1927) suggested that this block faulting took place during the late Pliocene or early Pleistocene, prior to which St. Croix was physically attached to the northern Virgin Islands.

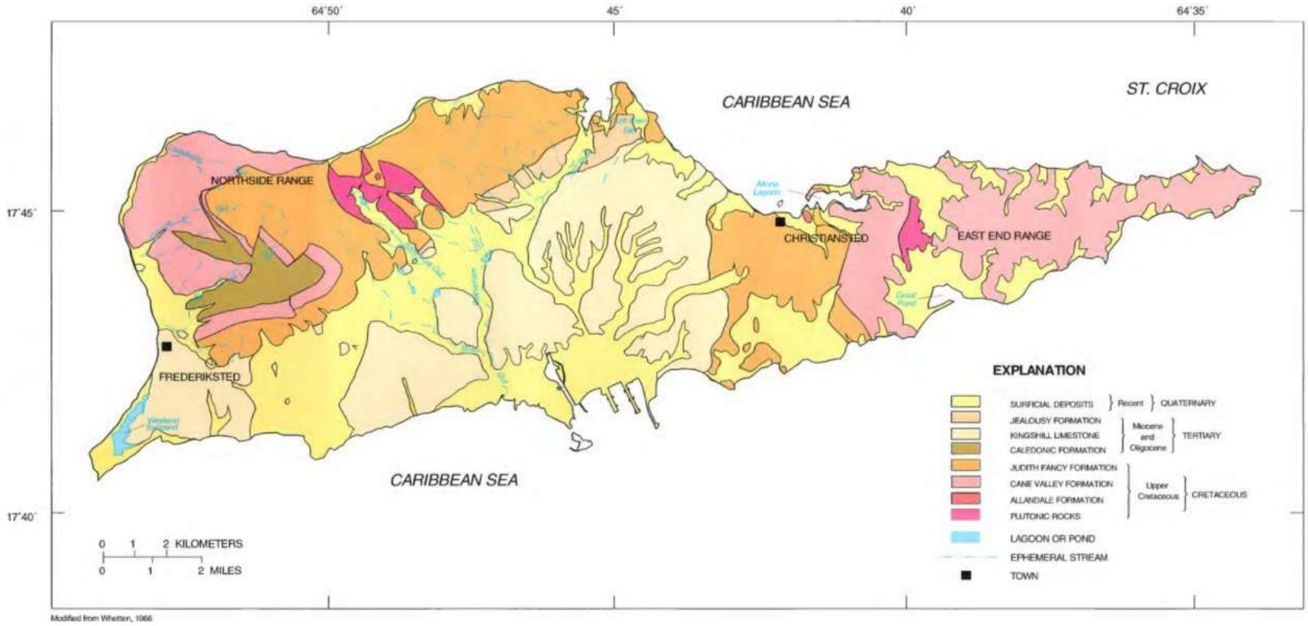

Figure 6.02.2 – General Geological formations of St. Croix (Atlas of Ground-Water Resources in Puerto Rico and the U.S. Virgin Islands)

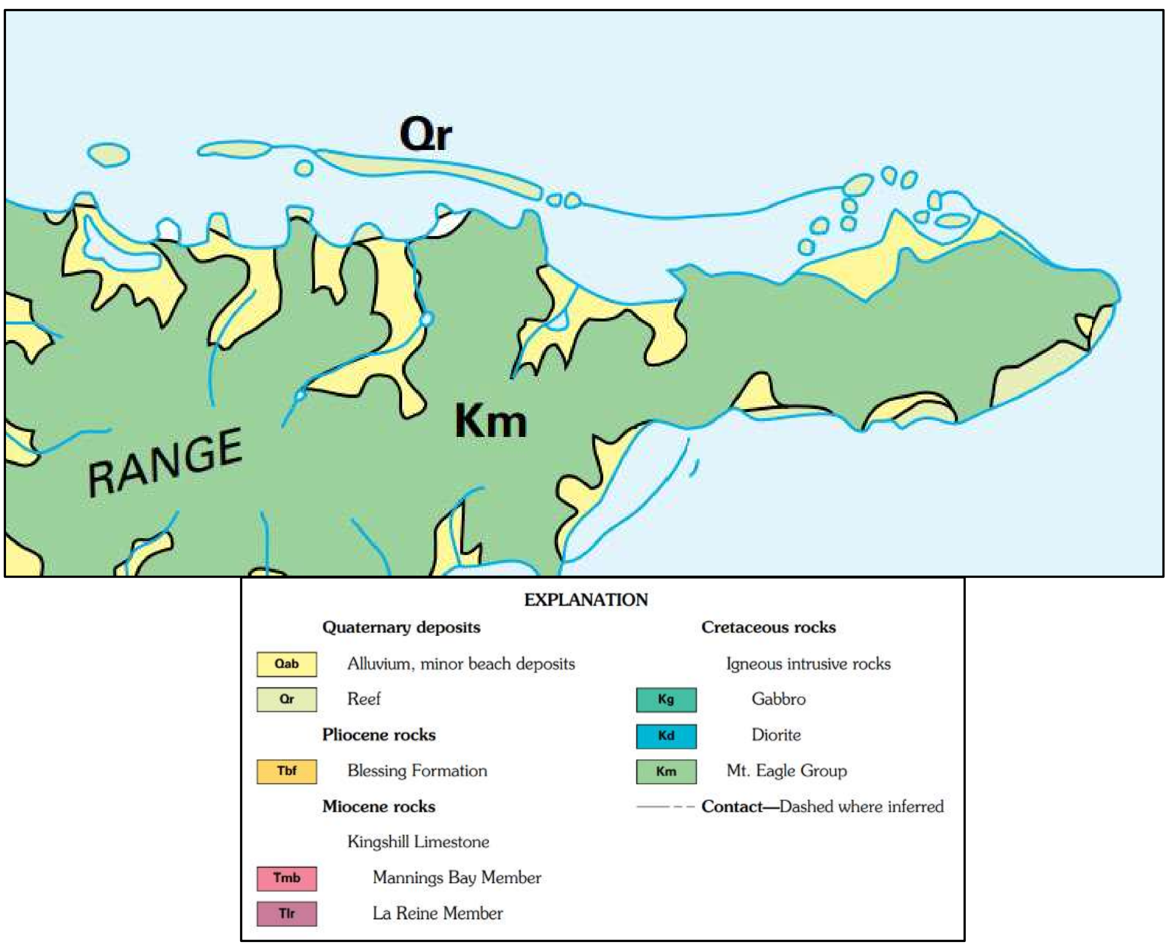

Figure 6.02.3 –Geological formations in vicinity of project site, St. Croix. Donnelly, 1959.

Geology of the Facility/Site

The project site is located at 17°45'32.6"N 64°38'07.3"W, along Route 82, East End Road. The Custom Soil Survey by the National Resource Conservation Service (NRCS) identifies the soil type for the project area as Southgate-Rock outcrop (SrF). However, to the west of the project site, along East End Road, the soil type is described as Cramer-Victory complex (CvE).

Southgate-Rock outcrop soils are typically found on summits and side slopes of volcanic hills and mountains. They are well-drained, moderately permeable soils with severe hazard of erosion (USDA Soil Survey of the United States Virgin Islands). SrF slopes vary from 40 to 60 percent.

Cramer-Victory complex soils are also found on summits and side slopes of volcanic hills and mountains. They are well-drained with moderately slow permeability and also have severe hazard of erosion (USDA Soil Survey of the United States Virgin Islands). CvE slopes vary from 20 to 40 percent.

Elevation at the project site is approximately 25 feet above sea level.

Figure 6.02.4 – MapGeo Soil Type Map

Historic Use

The land has been used as a transportation parcel for as long as records have been kept on historic uses.

Seismic Activity

The project will be built to meet or exceed the Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects requirements for Risk Category IV.

The Puerto Rico/Virgin Islands region is located at the northeastern corner of the Caribbean plate where motions are complex. The westward-moving North American plate is being driven under the Antilles Arc where volcanism is active. On the north side of the plate corner, the North American plate slides past the Caribbean but irregularities in the plate boundaries cause stresses that result in a complicated under thrusting of plate fragments. The interaction of plates causes the volcanism of the Antilles Arc on the eastern boundary of the Caribbean plate and creates major stresses all along the northern boundary (Nealon & Dillon, 2001).

Since the 1867 quake, there has been continuous, low intensity activity all below 6.0 Richter. Over the last several years, numerous minor tremors have been felt on the island. This increased activity is associated with the volcanic eruptions that have been occurring to the southeast on the island of Montserrat.

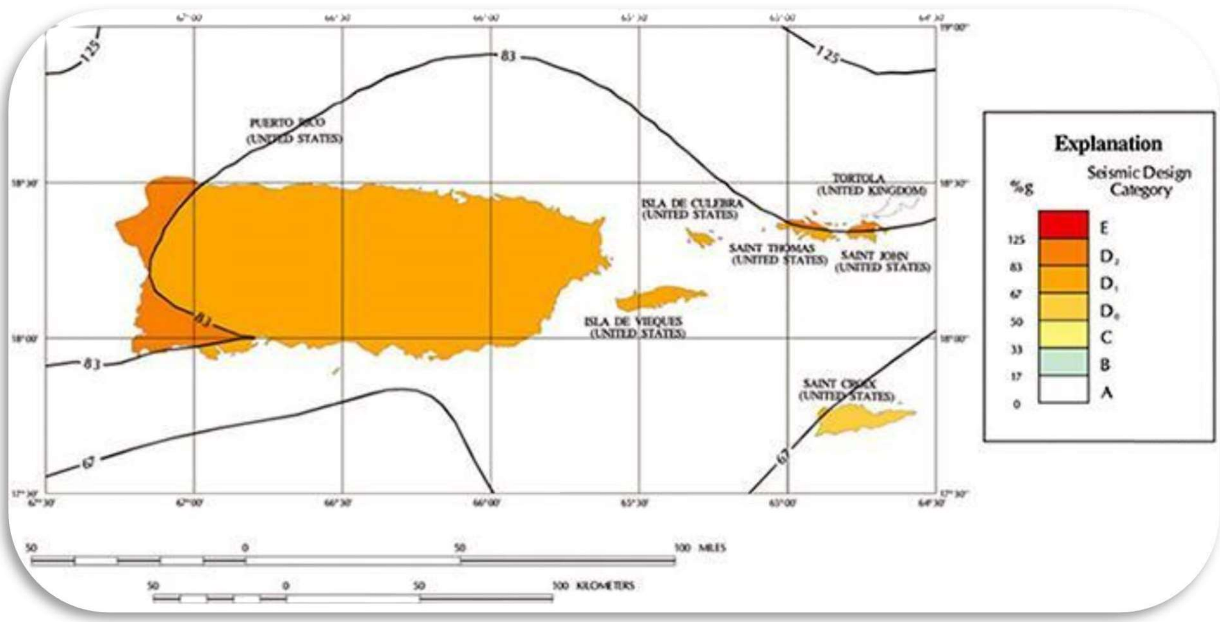

Figure 6.02.5 – FEMA Seismic Design Category Map

Impact of Geology on Proposed Project

The applicant has carefully considered landform, geology, soils and historic land use. The project has been designed to be consistent with these conditions, to improve the landform as it exists now and to cause minimal to no impact on the surrounding area and geology.

6.03 DRAINAGE, FLOODING, AND EROSION CONTROL

a) *Drainage Patterns*

The runoff from culvert drainage currently flows through privately owned property. This drainage route is expected to be maintained with no alterations. Most drainage in this area consists of shallow concentrated flow due to the steep slopes and vegetated area.

b) *Proposed Alterations to Drainage Patterns*

There are no proposed alterations to drainage patterns. The only change to drainage and storm water flow is to reinforce the spillway and outlet structure to ensure washout does not occur in the future.

c) *Relationship of Project to Coastal Floodplain*

Review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for U.S. Virgin Islands Index indicate that the project area is within the flood zone rated Zone A and in close vicinity to Zone AE, directly along the shoreline, where 100-yr storm elevations have been determined to be 10ft. See below in Figure 6.01.1 which is a portion of FIRM Panel 0074G, increased in size, depicting exact site location relative to flood zones.

Figure 6.03.1 – Section of Flood Insurance Rate Map (FIRM) Panel 0074G, 74 of 94, for Project Area. April 16, 2007